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(11) Utility Model Registration No. : 2503717

(12) UTILITY MODEL REGISTRATION PUBLICATION (Y2)

(19) JAPANESE PATENT OFFICE (JP)

(21) Application No. : Utility Model Hei 4[1992]-28976

(22) Application Date: April 3, 1992

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(43) Kokai Publication Date : March 15, 1994

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(54) [Title of the Utility Model] Pressure Sensitive Adhesion Processed Sheet

(55) Cited References

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(56) Utility Model Kokai No. : Hei 6[1994]-20043

(65) Kokai No. : Hei 6[1994]-20043

(72) Inventor

Hajime TANAKA

c/o Nichiei Kako Kabushiki Kaisha [Japanese Company or Corporation]

1-33, 6-chome, Higashimachi, Wakae, Higashi Osaka-shi

(72) Inventor

Tetsuo Oike

same as the above

(73) Applicant 000226091

Nichiei Kako Kabushiki Kaisha

1-33, 6-chome, Hibashimachi, Wakae, Higashi Osaka-shi

(74) Agent

Tatketsugu NAKATANI, patent agent

Examiner: Satoshi MORIKAWA

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(57) [CLAIMS OF THE UTILITY MODEL]

[CLAIM ITEM 1]

A pressure sensitive adhesion processed sheet has characteristics as such it is constituted of a surface sheet body (1), a pressure-sensitive adhesive layer (3) having multiple number of independent small convex ( ) parts (2)... which are arranged in a scattered dot manner, and a release paper (5) having multiple numbers of independent small concave ( ) parts (4) .... which are arranged in a scattered dot manner in such manner to correspond to said multiple numbers of small convex ( ) parts (2) ....; and in addition, above-explained small convex ( ) parts (2)... are designed to protrude from a basic flat plane (3a) of above-explained pressure-sensitive adhesive layer (3), and height dimension (H) of said small convex ( ) parts (2) .... is set to be within a range of  $3\mu\text{m} \sim 50\mu\text{m}$ .

[DETAILED EXPLANATION OF THE UTILITY MODEL]

[0001]

[FIELDS OF INDUSTRIAL APPLICATION]

This utility model relates to a pressure sensitive adhesion processed sheet.

[0002]

[PRIOR ART]

According to conventional pressure sensitive adhesion processed sheets, they are constituted of a pressure-sensitive adhesive sheet that is formed by coating a pressure-sensitive adhesive agent flatly on a surface sheet body, and a release paper that is arranged by pasting on said flat pressure-sensitive adhesive coated plane. In addition, release treated plane of said release paper is formed in a flat plane form. Furthermore, this has been often used by peeling said release paper and manually pasting this pressure-sensitive adhesive sheet body onto a surface of to-be pasted goods.

[0003]

[SUBJECTS SOLVED BY THIS UTILITY MODEL]

However, according to above-explained conventional pressure sensitive adhesion processed sheets, it is often the case that an air is pasted in between a pressure-sensitive adhesive sheet body and a surface of goods that is pasted on to causing such problem as that a portion where said air becomes involved shows a "raised form" resulting in expanded part on the surface side of pressure-sensitive adhesive sheet body that is pasted. In addition, when area of pressure-sensitive adhesive sheet body happens to be large (for instance, at least 10 square cm) in particular, said problem has been noted to become prominent.

[0004]

In addition, when above-explained pressure-sensitive adhesive sheet body is pasted onto a certain type of plastic (polycarbonate, acryl), some type of gas generates from the plastic causing "raised form" as well.

[0005]

Furthermore, when pasting position of above-explained pressure-sensitive adhesive sheet is in error at some rate, it is necessary to repast this; however, because once pasted pressure-sensitive adhesive sheet body has a strong pressure-sensitive adhesive force, when it is peeled, it may cause tear of pressure-sensitive adhesive sheet body, or may cause wrinkles to present difficulty on repasting work.

[0006]

And therefore, this utility model's purpose is to offer a pressure sensitive adhesion processed sheet that solves above-explained problems to allow an easy repasting without causing so-called "raised form".

[0007]

[MEASURES USED TO SOLVE THE SUBJECTS]

In order to attain above-explained purpose, the pressure sensitive adhesive processed sheet relating to this utility model is constituted of a surface sheet body, a pressure-sensitive adhesive layer having multiple numbers of independent small convex ( ) parts which are arranged in a scattered dot manner, and a release paper having multiple numbers of independent small concave ( ) parts which are arranged in a scattered dot manner to correspond with said multiple numbers of convex ( ) parts; and in addition, above-explained small convex ( ) parts are designed to protrude from a basic flat plane of above-explained pressure-sensitive adhesive layer, and height dimension of said small convex ( ) parts is set within a range of 3  $\mu\text{m}$  ~ 50  $\mu\text{m}$ .

[0008]

[ACTIONS]

When a release paper is peeled from this utility model's pressure sensitive adhesion processed sheet to paste its pressure-sensitive adhesive plane onto other goods, each top end part of multiple numbers of small convex ( ) parts of the pressure-sensitive adhesive layer would closely adhere to a surface of other good; and at the same time, basic flat plane of pressure-sensitive adhesive layer is maintained in such manner so it would be isolated from the surface of other goods. And therefore, gaps with a large cross section that allows gas to pass through are formed between basic flat plane of said pressure-sensitive adhesive plane and a surface of other goods. In addition, it is possible for the air to easily escape to outside from said gaps to enable to paste without causing so-called "raised form".

[0009]

In addition, when it is lightly pasted, because only to top end parts of small convex ( ) parts of the pressure-sensitive adhesive layer are closely adhered to the other goods, area of close adhesion remains small. And therefore, even when pasting location happens to be in error, it is possible to easily peel this again for repasting work.

[0010]

In addition, when this pressure sensitive adhesion processed sheet is firmly pressed against other goods, it would not cause accidental detachment.

[0011]

[EXAMPLES]

This utility model is further explained in details below based on attached Figures which explain examples.

[0012]

Figure 1 and Figure 2 illustrate one example of pressure sensitive adhesion processed sheet relating to this utility model; and this pressure sensitive adhesion processed sheet is widely used for various displays or decorations, and other various applications; and it is constituted of a surface sheet body (1), a pressure-sensitive adhesive layer (3) having multiple numbers of independent small convex ( ) parts (2) .... which are arranged in a scattered dot manner, and a release paper (5) of which release treated plane side (A) has multiple numbers of independent small concave ( ) parts (4) .... which are arranged in a scattered dot manner and are designed to closely adhere in correspondence with said multiple numbers of small concave ( ) parts (2) ....

[0013]

When this is stated in other words, this utility model's pressure sensitive adhesion processed sheet is formed of a pressure-sensitive adhesive sheet main body (6) comprising a surface sheet body (1) and a pressure-sensitive adhesive layer (3) of which plane of pressure sensitive adhesive layer (3) side is formed

as a pressure-sensitive adhesive plane; and said pressure-sensitive adhesive plane of this pressure-sensitive adhesive sheet main body (6) is covered with a release paper (5).

[0014]

According to this example, small convex ( ) parts (2) .... of the pressure-sensitive adhesive layer (3) are each formed in a semi-spherical shape, and at the same time, they are arranged in every prescribed gap (in lattice manner) in vertical and horizontal directions.

[0015]

Figure 1 illustrates a view in which only the thickness dimension is enlarged.

[0016]

In addition, it is free to set said pressure-sensitive adhesive sheet main body (6) in any shapes as well as sizes; and it is also favorable when characters, codes, or patterns, or combination of these and coloration applied to the plane that is opposite side to said pressure-sensitive adhesive plane.

[0017]

In addition, as for the materials for surface sheet body (1), papers or plastic films and the like may be used.

[0018]

Furthermore, various types of papers may be used; and for instance, it is preferable when wood free paper showing about  $50 \text{ g/m}^2 \sim 200 \text{ g/m}^2$  basic weight is used.

[0019]

In addition, as for the types of plastic film, for instance, polyester film or vinyl chloride film may be used; and furthermore, other plastic films may be also used. It is also possible to set the thickness dimension in free manner, and it may be preferably set as about  $20 \mu\text{m} \sim 200 \mu\text{m}$ .

[0020]

As for the materials for pressure-sensitive adhesive layer (3), various pressure-sensitive adhesive agents may be used as long as it shows such tack level that can form small convex ( ) parts (2) ....

[0021]

Said small convex ( ) parts (2) ... are made to protrude from a basic flat plane (3a) of the pressure-sensitive adhesive layer (3). In addition, height dimension (H) of small convex ( ) parts (2) .... of the pressure-sensitive adhesive layer should be set within a range of about  $3 \mu\text{m} \sim 50 \mu\text{m}$ , or more preferably  $15 \mu\text{m} \sim 25 \mu\text{m}$ .

[0022]

As for the materials for release paper (5), paper or plastic film may be used; and in the case of paper, release treated plane side (A) should be laminated with a plastic such as polyethylene and the like. In addition, thickness of that lamination should be set as about  $5 \mu\text{m} \sim 100 \mu\text{m}$ , or more preferably, about  $30 \mu\text{m} \sim 50 \mu\text{m}$ .

[0023]

Furthermore, when plastic film is used as said release paper (5), polyester, polypropylene, or polyethylene and the like may be used as such material.

[0024]

In addition, depth dimension of small concave ( ) parts (4) .... of the release paper (5) may be set as identical to the height dimension (H) of small convex ( ) parts (2) .... of the pressure-sensitive adhesive layer (3) (about  $3 \mu\text{m} \sim 50 \mu\text{m}$ , or more preferably  $15 \mu\text{m} \sim 25 \mu\text{m}$ ).

[0025]

Then, manufacturing method of this pressure sensitive adhesion processed sheet is explained in the order of manufacturing process.

[0026]

First of all, on a release treated plane (A) of the release paper (5), multiple numbers of independent small concave ( ) parts (4) .... are formed through embossing method or printing method and the like.

[0027]

When forming small concave ( ) parts (4) .... through above-explained printing method, small concave ( ) parts (4) .... may be formed by forming raised convex ( ) parts by printing at the portions other than the parts where small concave ( ) parts (4) .... are formed on the release treated plane (A).

[0028]

Then, silicon resin is coated on the plane where small concave ( ) parts (4) ..... are formed to prepare a release treated plane (A).

[0029]

Then, a pressure-sensitive adhesive agent is coated on the release treated plane (A) on which silicon resin is coated. By doing so, part of pressure-sensitive adhesive agent that is coated is packed within small concave ( ) parts (4) .... of the release paper (5).

[0030]

Furthermore, this pressure-sensitive adhesive agent is dried to form a pressure-sensitive adhesive layer (3).

[0031]

The pressure-sensitive adhesive agent within said small concave ( ) parts (4) .... is solidified in almost the identical shape as that of inside of the small concave ( ) parts (4) ..... and becomes independent small convex ( ) parts (2) .....

[0032]

Then, one plane side of the surface sheet body (1) is closely adhered to the plane that is opposite side to the release paper (5) side of the pressure-sensitive adhesive layer (3).

[0033]

By doing so, pressure-sensitive adhesive layer (3) and release paper (5) are mutually and closely adhered to give a pressure-sensitive adhesive sheet main body (6).

[0034]

This utility model's pressure sensitive adhesion processed sheet is manufactured in above-explained manner.

[0035]

The pressure sensitive adhesion processed sheet of this utility model that is manufactured in above-explained manner allows easy peeling and removal of only the release paper (5); and small convex ( ) parts remain protruding from the plane of pressure-sensitive adhesive layer (3) side of the pressure-sensitive adhesive main body (6).

[0036]

Then, when a pressure-sensitive adhesive main body (although this portion is not illustrated in the Figure) onto an other goods lightly, only the top end part of said small convex ( ) parts (2) .... becomes

closely adhered to the surface of other goods; and at the same time, gaps which connect to outside are created at the portions between pressure-sensitive adhesive layer (3) and surface of other goods excluding small convex ( ) parts (2) ....

[0037]

And as it is easy to extract air to outside from said gaps, even when air becomes involved, it is easy to extract this to outside.

[0038]

In addition, when pressure-sensitive adhesive sheet main body (6) is lightly pasted, area of close adhesion of the pressure-sensitive adhesive layer (3) remains small, and even when pasting location is in error, it is possible to re-peel this to repast easily.

[0039]

Furthermore, when prescribed time elapses after pasting, small convex ( ) parts (2) .... of pressure-sensitive adhesive layer (3) show plastic deformation to increase area of close adhesion to generate a firm pressure-sensitive adhesive force.

[0040]

Then, Figure 3 illustrates a first modified example of the small convex ( ) parts (2) .... of the pressure-sensitive adhesive layer (3); and according to this example, each small convex ( ) part (2) .... is designed in a rectangular cone trapezoidal shape.

[0041]

In addition, Figure 4 illustrates a second modified example of small convex ( ) parts (2) ...., and according to this example, each small convex ( ) part (2) ... is formed as a small could formation (amorphous shape), and at the same time, they are arranged in zigzag manner.

[0042]

Furthermore, it is free to set the shapes of first modification example small convex ( ) parts (2) ... as well as second modification example small convex ( ) parts (2) ... in any shapes such as cone shape, cone trapezoidal shape, or rectangular cone shape and the like.

[0043]

Then, two concrete examples of this utility model's pressure sensitive adhesion processed sheet are explained.

[0044]

First of all, polyethylene was laminated at 30  $\mu\text{m}$  thickness on a wood free paper with 110  $\text{g/m}^2$  basis weight, and in addition, small concave ( ) parts (4) .... with conical shape were formed through embossing to form a release paper (5). Then, small concave ( ) parts (4) ... were arranged at every 1 mm gap in vertical and horizontal directions, and inner diameter of opening part was set to be 0.3 mm, and furthermore, depth was set to 20  $\mu\text{m}$ .

[0045]

On a laminate plane (release treated plane A) of above-explained release paper (5), silicon resin was coated, and on this plane, pressure-sensitive adhesive agent (BPS-5160 made by Toyo Ink K.K.) was coated and dried at 70  $\text{g/m}^2$  to form a pressure-sensitive adhesive layer (3).

[0046]

Then, this pressure-sensitive adhesive layer (3) was pasted with a surface sheet body (1) formed of a polyester film to form a pressure sensitive adhesion processed sheet of the first concrete example.

[0047]

A release paper (5) of this pressure sensitive adhesion processed sheet could be easily peeled, and on the plane with exposed pressure-sensitive adhesive layer (3), appearance of independent small convex ( ) parts (2) .... showing 0.3 mm bottom end part outer diameter and 20  $\mu$ m depth at every 1 mm gap in vertical and horizontal directions was noted.

[0048]

Then, pressure-sensitive adhesive sheet main body (6) of this pressure sensitive adhesion processed sheet was pasted manually onto a coated iron panel cut to 50 cm square size; and even when air became involved, it could easily extracted to cause no so-called "raised form".

[0049]

In addition, once lightly pasted pressure-sensitive adhesive sheet main body (6) could be easily peeled without causing wrinkles. In addition, when it was repasted, it did not inhibit its aesthetic appearance.

[0050]

Then, on a wood free paper with 110 g/m<sup>2</sup> basis weight, gravure printing was applied to form raised bands showing lattice form on a flat plane view.

[0051]

A release paper (5) was formed by using the portions of flat plane view square shapes surrounded with said raised bands as small concave ( ) parts (4) .... In addition, small concave ( ) parts (4) ... were arranged at every 1 mm gap in vertical and horizontal directions, and one side of opening was set to 0.3 mm and depth was set to 20  $\mu$ m.

[0052]

On a printed plane (release treated plane A) of above-explained release paper (5), silicon resin was coated, and on this plane, pressure-sensitive adhesive agent (BPS-5160 made by Toyo Ink K.K.) was coated at 70g/m<sup>2</sup> and was dried to form a pressure-sensitive adhesive layer (3).

[0053]

Then, this pressure-sensitive adhesive layer (3) was pasted with a surface sheet body (1) that is formed of a vinyl chloride film with 70  $\mu$ m thickness to form a pressure sensitive adhesion processed sheet of the second concrete example.

[0054]

A release paper (5) of this pressure sensitive adhesion processed sheet could be easily peeled; and on the plane where pressure-sensitive adhesive layer (3) is exposed, appearance of small convex ( ) parts (2) .... Showing independent plane view of square shaped with 0.3 mm in vertical and horizontal sides and 20  $\mu$ m depth was noted at every 1 mm gap in vertical and horizontal directions.

[0055]

When pressure-sensitive adhesive sheet main body (6) of this pressure sensitive adhesion processed sheet was pasted manually onto a coated iron panel cut to 50 square cm, ever when air became involved, it was possible to easily extract this to cause no so-called "raised form".

[0056]

In addition, once lightly pasted pressure-sensitive adhesive sheet main body (6) could be easily peeled without causing wrinkles. When it was repasted, it did not inhibit any of its aesthetic appearance.



[0057]

[EFFECTS OF THE UTILITY MODEL]

This utility model shows following effects due to its constitution explained above:

[0058]

(1) When a plane of small convex ( ) parts (2) .. of the pressure-sensitive adhesive layer side are lightly pasted onto other goods first, (as only the top end parts of said small convex ( ) parts (2) .. are pasted onto the other goods), it is possible to peel this easily. And therefore, even when pasting location is in error, it is possible to peel this again and repast it.

[0059]

(2) Because gaps showing large aeration cross sectional area are formed between pressure-sensitive adhesive layer (3) and other goods (connects to outside), air cannot be pasted in between pressure-sensitive adhesive layer (3) and other goods to cause no so-called "raised form". And therefore, it is possible to conduct a pasting work manually in easy and quick manner.

[0060]

(3) Because gaps showing large aeration cross sectional area (connects to outside) are formed between pressure-sensitive adhesive layer (3) and other goods at a state of completion of pasting, even when gas may generate (over long period of time) between pressure-sensitive adhesive layer (3) and other goods that is pasted on to this, it is possible to spontaneously extract such gas to outside to cause no "raised form".

[BRIEF DESCRIPTION OF THE FIGURES]

[Figure 1]

It illustrates an enlarged cross section of main parts showing one example of this utility model's pressure sensitive adhesive processed sheet.

[Figure 2]

It illustrates a diagonal view showing major parts.

[Figure 3]

It illustrates a diagonal view showing first modification example of small convex ( ) parts.

[Figure 4]

It illustrates a diagonal view showing second modification example of small convex ( ) parts.

[DESCRIPTION OF CODES]

- 1 surface sheet body
- 2 small convex ( ) part
- 3 pressure-sensitive adhesive layer
- 3a basic flat plane
- 4 small concave ( ) part
- 5 release paper
- H height dimension

**Figures 1 through 4**

**Translation requested by: John H. Hornickel, OIPC**  
**Translation by: Mie N. Arntson, 512-331-7167**

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(57) [CLAIMS OF THE UTILITY MODEL]

[CLAIM ITEM 1]

A pressure sensitive adhesion processed sheet has characteristics as such it is constituted of a surface sheet body (1), a pressure-sensitive adhesive layer (3) having multiple number of independent small convex ( ) parts (2)... which are arranged in a scattered dot manner, and a release paper (5) having multiple numbers of independent small concave ( ) parts (4) .... which are arranged in a scattered dot manner in such manner to correspond to said multiple numbers of small convex ( ) parts (2) ....; and in addition, above-explained small convex ( ) parts (2)... are designed to protrude from a basic flat plane (3a) of above-explained pressure-sensitive adhesive layer (3), and height dimension (H) of said small convex ( ) parts (2) .... is set to be within a range of  $3\mu\text{m} \sim 50\mu\text{m}$ .

[DETAILED EXPLANATION OF THE UTILITY MODEL]

[0001]

[FIELDS OF INDUSTRIAL APPLICATION]

This utility model relates to a pressure sensitive adhesion processed sheet.

[0002]

[PRIOR ART]

According to conventional pressure sensitive adhesion processed sheets, they are constituted of a pressure-sensitive adhesive sheet that is formed by coating a pressure-sensitive adhesive agent flatly on a surface sheet body, and a release paper that is arranged by pasting on said flat pressure-sensitive adhesive coated plane. In addition, release treated plane of said release paper is formed in a flat plane form. Furthermore, this has been often used by peeling said release paper and manually pasting this pressure-sensitive adhesive sheet body onto a surface of to-be pasted goods.

[0003]

[SUBJECTS SOLVED BY THIS UTILITY MODEL]

However, according to above-explained conventional pressure sensitive adhesion processed sheets, it is often the case that an air is pasted in between a pressure-sensitive adhesive sheet body and a surface of goods that is pasted on to causing such problem as that a portion where said air becomes involved shows a "raised form" resulting in expanded part on the surface side of pressure-sensitive adhesive sheet body that is pasted. In addition, when area of pressure-sensitive adhesive sheet body happens to be large (for instance, at least 10 square cm) in particular, said problem has been noted to become prominent.

[0004]

In addition, when above-explained pressure-sensitive adhesive sheet body is pasted onto a certain type of plastic (polycarbonate, acryl), some type of gas generates from the plastic causing "raised form" as well.

[0005]

Furthermore, when pasting position of above-explained pressure-sensitive adhesive sheet is in error at some rate, it is necessary to repast this; however, because once pasted pressure-sensitive adhesive sheet body has a strong pressure-sensitive adhesive force, when it is peeled, it may cause tear of pressure-sensitive adhesive sheet body, or may cause wrinkles to present difficulty on repasting work.

[0006]

And therefore, this utility model's purpose is to offer a pressure sensitive adhesion processed sheet that solves above-explained problems to allow an easy repasting without causing so-called "raised form".

[0007]

[MEASURES USED TO SOLVE THE SUBJECTS]

In order to attain above-explained purpose, the pressure sensitive adhesive processed sheet relating to this utility model is constituted of a surface sheet body, a pressure-sensitive adhesive layer having multiple numbers of independent small convex ( ) parts which are arranged in a scattered dot manner, and a release paper having multiple numbers of independent small concave ( ) parts which are arranged in a scattered dot manner to correspond with said multiple numbers of convex ( ) parts; and in addition, above-explained small convex ( ) parts are designed to protrude from a basic flat plane of above-explained pressure-sensitive adhesive layer, and height dimension of said small convex ( ) parts is set within a range of 3  $\mu\text{m}$  ~ 50  $\mu\text{m}$ .

[0008]

[ACTIONS]

When a release paper is peeled from this utility model's pressure sensitive adhesion processed sheet to paste its pressure-sensitive adhesive plane onto other goods, each top end part of multiple numbers of small convex ( ) parts of the pressure-sensitive adhesive layer would closely adhere to a surface of other good; and at the same time, basic flat plane of pressure-sensitive adhesive layer is maintained in such manner so it would be isolated from the surface of other goods. And therefore, gaps with a large cross section that allows gas to pass through are formed between basic flat plane of said pressure-sensitive adhesive plane and a surface of other goods. In addition, it is possible for the air to easily escape to outside from said gaps to enable to paste without causing so-called "raised form".

[0009]

In addition, when it is lightly pasted, because only to top end parts of small convex ( ) parts of the pressure-sensitive adhesive layer are closely adhered to the other goods, area of close adhesion remains small. And therefore, even when pasting location happens to be in error, it is possible to easily peel this again for repasting work.

[0010]

In addition, when this pressure sensitive adhesion processed sheet is firmly pressed against other goods, it would not cause accidental detachment.

[0011]

[EXAMPLES]

This utility model is further explained in details below based on attached Figures which explain examples.

[0012]

Figure 1 and Figure 2 illustrate one example of pressure sensitive adhesion processed sheet relating to this utility model; and this pressure sensitive adhesion processed sheet is widely used for various displays or decorations, and other various applications; and it is constituted of a surface sheet body (1), a pressure-sensitive adhesive layer (3) having multiple numbers of independent small convex ( ) parts (2) .... which are arranged in a scattered dot manner, and a release paper (5) of which release treated plane side (A) has multiple numbers of independent small concave ( ) parts (4) .... which are arranged in a scattered dot manner and are designed to closely adhere in correspondence with said multiple numbers of small concave ( ) parts (2) ....

[0013]

When this is stated in other words, this utility model's pressure sensitive adhesion processed sheet is formed of a pressure-sensitive adhesive sheet main body (6) comprising a surface sheet body (1) and a pressure-sensitive adhesive layer (3) of which plane of pressure sensitive adhesive layer (3) side is formed

as a pressure-sensitive adhesive plane; and said pressure-sensitive adhesive plane of this pressure-sensitive adhesive sheet main body (6) is covered with a release paper (5).

[0014]

According to this example, small convex ( ) parts (2) .... of the pressure-sensitive adhesive layer (3) are each formed in a semi-spherical shape, and at the same time, they are arranged in every prescribed gap (in lattice manner) in vertical and horizontal directions.

[0015]

Figure 1 illustrates a view in which only the thickness dimension is enlarged.

[0016]

In addition, it is free to set said pressure-sensitive adhesive sheet main body (6) in any shapes as well as sizes; and it is also favorable when characters, codes, or patterns, or combination of these and coloration applied to the plane that is opposite side to said pressure-sensitive adhesive plane.

[0017]

In addition, as for the materials for surface sheet body (1), papers or plastic films and the like may be used.

[0018]

Furthermore, various types of papers may be used; and for instance, it is preferable when wood free paper showing about  $50 \text{ g/m}^2 \sim 200 \text{ g/m}^2$  basic weight is used.

[0019]

In addition, as for the types of plastic film, for instance, polyester film or vinyl chloride film may be used; and furthermore, other plastic films may be also used. It is also possible to set the thickness dimension in free manner, and it may be preferably set as about  $20 \mu\text{m} \sim 200 \mu\text{m}$ .

[0020]

As for the materials for pressure-sensitive adhesive layer (3), various pressure-sensitive adhesive agents may be used as long as it shows such tack level that can form small convex ( ) parts (2) ....

[0021]

Said small convex ( ) parts (2) ... are made to protrude from a basic flat plane (3a) of the pressure-sensitive adhesive layer (3). In addition, height dimension (H) of small convex ( ) parts (2) .... of the pressure-sensitive adhesive layer should be set within a range of about  $3 \mu\text{m} \sim 50 \mu\text{m}$ , or more preferably  $15 \mu\text{m} \sim 25 \mu\text{m}$ .

[0022]

As for the materials for release paper (5), paper or plastic film may be used; and in the case of paper, release treated plane side (A) should be laminated with a plastic such as polyethylene and the like. In addition, thickness of that lamination should be set as about  $5 \mu\text{m} \sim 100 \mu\text{m}$ , or more preferably, about  $30 \mu\text{m} \sim 50 \mu\text{m}$ .

[0023]

Furthermore, when plastic film is used as said release paper (5), polyester, polypropylene, or polyethylene and the like may be used as such material.

[0024]

In addition, depth dimension of small concave ( ) parts (4) .... of the release paper (5) may be set as identical to the height dimension (H) of small convex ( ) parts (2) .... of the pressure-sensitive adhesive layer (3) (about  $3 \mu\text{m} \sim 50 \mu\text{m}$ , or more preferably  $15 \mu\text{m} \sim 25 \mu\text{m}$ ).

[0025]

Then, manufacturing method of this pressure sensitive adhesion processed sheet is explained in the order of manufacturing process.

[0026]

First of all, on a release treated plane (A) of the release paper (5), multiple numbers of independent small concave ( ) parts (4) .... are formed through embossing method or printing method and the like.

[0027]

When forming small concave ( ) parts (4) .... through above-explained printing method, small concave ( ) parts (4) .... may be formed by forming raised convex ( ) parts by printing at the portions other than the parts where small concave ( ) parts (4) .... are formed on the release treated plane (A).

[0028]

Then, silicon resin is coated on the plane where small concave ( ) parts (4) ..... are formed to prepare a release treated plane (A).

[0029]

Then, a pressure-sensitive adhesive agent is coated on the release treated plane (A) on which silicon resin is coated. By doing so, part of pressure-sensitive adhesive agent that is coated is packed within small concave ( ) parts (4) .... of the release paper (5).

[0030]

Furthermore, this pressure-sensitive adhesive agent is dried to form a pressure-sensitive adhesive layer (3).

[0031]

The pressure-sensitive adhesive agent within said small concave ( ) parts (4) .... is solidified in almost the identical shape as that of inside of the small concave ( ) parts (4) ..... and becomes independent small convex ( ) parts (2) .....

[0032]

Then, one plane side of the surface sheet body (1) is closely adhered to the plane that is opposite side to the release paper (5) side of the pressure-sensitive adhesive layer (3).

[0033]

By doing so, pressure-sensitive adhesive layer (3) and release paper (5) are mutually and closely adhered to give a pressure-sensitive adhesive sheet main body (6).

[0034]

This utility model's pressure sensitive adhesion processed sheet is manufactured in above-explained manner.

[0035]

The pressure sensitive adhesion processed sheet of this utility model that is manufactured in above-explained manner allows easy peeling and removal of only the release paper (5); and small convex ( ) parts remain protruding from the plane of pressure-sensitive adhesive layer (3) side of the pressure-sensitive adhesive main body (6).

[0036]

Then, when a pressure-sensitive adhesive main body (although this portion is not illustrated in the Figure) onto an other goods lightly, only the top end part of said small convex ( ) parts (2) .... becomes

closely adhered to the surface of other goods; and at the same time, gaps which connect to outside are created at the portions between pressure-sensitive adhesive layer (3) and surface of other goods excluding small convex ( ) parts (2) ....

[0037]

And as it is easy to extract air to outside from said gaps, even when air becomes involved, it is easy to extract this to outside.

[0038]

In addition, when pressure-sensitive adhesive sheet main body (6) is lightly pasted, area of close adhesion of the pressure-sensitive adhesive layer (3) remains small, and even when pasting location is in error, it is possible to re-peel this to repast easily.

[0039]

Furthermore, when prescribed time elapses after pasting, small convex ( ) parts (2) .... of pressure-sensitive adhesive layer (3) show plastic deformation to increase area of close adhesion to generate a firm pressure-sensitive adhesive force.

[0040]

Then, Figure 3 illustrates a first modified example of the small convex ( ) parts (2) .... of the pressure-sensitive adhesive layer (3); and according to this example, each small convex ( ) part (2) .... is designed in a rectangular cone trapezoidal shape.

[0041]

In addition, Figure 4 illustrates a second modified example of small convex ( ) parts (2) ...., and according to this example, each small convex ( ) part (2) ... is formed as a small could formation (amorphous shape), and at the same time, they are arranged in zigzag manner.

[0042]

Furthermore, it is free to set the shapes of first modification example small convex ( ) parts (2) ... as well as second modification example small convex ( ) parts (2) ... in any shapes such as cone shape, cone trapezoidal shape, or rectangular cone shape and the like.

[0043]

Then, two concrete examples of this utility model's pressure sensitive adhesion processed sheet are explained.

[0044]

First of all, polyethylene was laminated at 30  $\mu\text{m}$  thickness on a wood free paper with 110  $\text{g/m}^2$  basis weight, and in addition, small concave ( ) parts (4) .... with conical shape were formed through embossing to form a release paper (5). Then, small concave ( ) parts (4) ... were arranged at every 1 mm gap in vertical and horizontal directions, and inner diameter of opening part was set to be 0.3 mm, and furthermore, depth was set to 20  $\mu\text{m}$ .

[0045]

On a laminate plane (release treated plane A) of above-explained release paper (5), silicon resin was coated, and on this plane, pressure-sensitive adhesive agent (BPS-5160 made by Toyo Ink K.K.) was coated and dried at 70  $\text{g/m}^2$  to form a pressure-sensitive adhesive layer (3).

[0046]



Then, this pressure-sensitive adhesive layer (3) was pasted with a surface sheet body (1) formed of a polyester film to form a pressure sensitive adhesion processed sheet of the first concrete example.

[0047]

A release paper (5) of this pressure sensitive adhesion processed sheet could be easily peeled, and on the plane with exposed pressure-sensitive adhesive layer (3), appearance of independent small convex ( ) parts (2) .... showing 0.3 mm bottom end part outer diameter and 20  $\mu$ m depth at every 1 mm gap in vertical and horizontal directions was noted.

[0048]

Then, pressure-sensitive adhesive sheet main body (6) of this pressure sensitive adhesion processed sheet was pasted manually onto a coated iron panel cut to 50 cm square size; and even when air became involved, it could easily extracted to cause no so-called "raised form".

[0049]

In addition, once lightly pasted pressure-sensitive adhesive sheet main body (6) could be easily peeled without causing wrinkles. In addition, when it was repasted, it did not inhibit its aesthetic appearance.

[0050]

Then, on a wood free paper with 110 g/m<sup>2</sup> basis weight, gravure printing was applied to form raised bands showing lattice form on a flat plane view.

[0051]

A release paper (5) was formed by using the portions of flat plane view square shapes surrounded with said raised bands as small concave ( ) parts (4) .... In addition, small concave ( ) parts (4) ... were arranged at every 1 mm gap in vertical and horizontal directions, and one side of opening was set to 0.3 mm and depth was set to 20  $\mu$ m.

[0052]

On a printed plane (release treated plane A) of above-explained release paper (5), silicon resin was coated, and on this plane, pressure-sensitive adhesive agent (BPS-5160 made by Toyo Ink K.K.) was coated at 70g/m<sup>2</sup> and was dried to form a pressure-sensitive adhesive layer (3).

[0053]

Then, this pressure-sensitive adhesive layer (3) was pasted with a surface sheet body (1) that is formed of a vinyl chloride film with 70  $\mu$ m thickness to form a pressure sensitive adhesion processed sheet of the second concrete example.

[0054]

A release paper (5) of this pressure sensitive adhesion processed sheet could be easily peeled; and on the plane where pressure-sensitive adhesive layer (3) is exposed, appearance of small convex ( ) parts (2) .... Showing independent plane view of square shaped with 0.3 mm in vertical and horizontal sides and 20  $\mu$ m depth was noted at every 1 mm gap in vertical and horizontal directions.

[0055]

When pressure-sensitive adhesive sheet main body (6) of this pressure sensitive adhesion processed sheet was pasted manually onto a coated iron panel cut to 50 square cm, ever when air became involved, it was possible to easily extract this to cause no so-called "raised form".

[0056]

In addition, once lightly pasted pressure-sensitive adhesive sheet main body (6) could be easily peeled without causing wrinkles. When it was repasted, it did not inhibit any of its aesthetic appearance.

[0057]

[EFFECTS OF THE UTILITY MODEL]

This utility model shows following effects due to its constitution explained above:

[0058]

(1) When a plane of small convex ( ) parts (2) .. of the pressure-sensitive adhesive layer side are lightly pasted onto other goods first, (as only the top end parts of said small convex ( ) parts (2) .. are pasted onto the other goods), it is possible to peel this easily. And therefore, even when pasting location is in error, it is possible to peel this again and repast it.

[0059]

(2) Because gaps showing large aeration cross sectional area are formed between pressure-sensitive adhesive layer (3) and other goods (connects to outside), air cannot be pasted in between pressure-sensitive adhesive layer (3) and other goods to cause no so-called "raised form". And therefore, it is possible to conduct a pasting work manually in easy and quick manner.

[0060]

(3) Because gaps showing large aeration cross sectional area (connects to outside) are formed between pressure-sensitive adhesive layer (3) and other goods at a state of completion of pasting, even when gas may generate (over long period of time) between pressure-sensitive adhesive layer (3) and other goods that is pasted on to this, it is possible to spontaneously extract such gas to outside to cause no "raised form".

[BRIEF DESCRIPTION OF THE FIGURES]

[Figure 1]

It illustrates an enlarged cross section of main parts showing one example of this utility model's pressure sensitive adhesive processed sheet.

[Figure 2]

It illustrates a diagonal view showing major parts.

[Figure 3]

It illustrates a diagonal view showing first modification example of small convex ( ) parts.

[Figure 4]

It illustrates a diagonal view showing second modification example of small convex ( ) parts.

[DESCRIPTION OF CODES]

- 1 surface sheet body
- 2 small convex ( ) part
- 3 pressure-sensitive adhesive layer
- 3a basic flat plane
- 4 small concave ( ) part
- 5 release paper
- H height dimension

Figures 1 through 4

Translation requested by: John H. Hornickel, OIPC  
Translation by: Mie N. Arntson, 512-331-7167